CLAIMS

1 – An installation for the high-speed acquisition of acquisition data via an Ethernet network **(2)** with several
5   nodes **(N)**, where at least one of the nodes of the Ethernet network constitutes a client/server detection unit **(3)** with at least one detector **(4)** delivering acquisition data,
characterised in that each detection unit **(3)** includes:
- self-triggering resources for reading the acquisition data
10   so that the said detection unit **(3)** is able to operate independently,
- reading and processing resources independent of the other nodes,
- resources for transmission of the acquisition data via the
15   network **(2)** to at least one other node **(N)**,
- and a clock unit allowing correlation between the clocks of the detection units, where each clock unit has:
  • resources for receiving a clock synchronisation signal, generated by one of the said units and including encoded
20   instructions,
  • resources for transmission of an acknowledge signal to the clock unit transmitting a synchronisation signal,
  • and resources for processing the encoded instructions, in particular to increment an event-marking sensor.
25   2 – An installation according to claim 1, characterised in that at least one of the nodes **(N)** of the Ethernet network **(2)** constitutes a client/server user unit **(10)** designed to provide the detection unit **(3)** with configuration data from the said unit, and to receive acquisition data transmitted by
30   the detection unit **(3)**.
3 – An installation according to claims 1 and 2, characterised in that each detection unit **(3)** includes:

- a detector **(4)** performing the conversion of a physical magnitude into electrical signals delivered on several output paths,
- and a sequencer **(13)** with resources performing:

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  - sequencing for reading the acquisition data from the detector and the configuration data,
  - storage of the acquisition and configuration data,
  - analysis and processing of the acquisition data from the detector,

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  - the interface to a network processor **(2)**,
- and an Ethernet network processor **(14)** with resources providing:
  - the interface to the sequencer,
  - reception of the data sent by the user unit **(10)** to

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    perform the configuration of the detector **(4)** and of the sequencer **(13)**,
  - processing of the acquisition data,
  - and transmission of the acquisition data from the detector **(4)** to the user unit **(10)**.

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4 - An installation according to claim 3, characterised in that the sequencer **(13)** includes resources performing:
- formatting of the acquisition data from the detector (4) and of the information resulting from the processing effected by the detection unit **(3)**,

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- storage in a memory (16) of the processed and formatted acquisition data,
- and temporal marking of the trigger for acquisition of the data.

5 - An installation according to claim 4, characterised

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in that the sequencer **(13)** is built around an FPGA device.

6 - An installation according to claims 1 and 3, characterised in that the Ethernet network processor **(14)** includes resources performing:

- retrieval of the data stored in the memory (16) by the
5   sequencer **(13)**,

- analysis and processing of the said data,

- formatting of the processed data,

- and shared management of the data processing with other nodes of the network **(2)**.

10   **7** - An installation according to claim 4, characterised in that the sequencer **(13)** performs the storage of the data in memory **(16)** inside or outside the sequencer.

8 - An installation according to claim 1, characterised in that the detector **(4)** includes :

15 - a sensitive sensor with a series of output paths,

- a sub-module for reading the acquisition data, controlled by the sequencer and including a frontal electronic unit,

- and a control sub-module managed by the sequencer to configure and control the frontal electronic unit.

20   **9** - An installation according to claim 8, characterised in that the frontal electronic unit of the read sub-module includes:

- resources for reading the acquisition data, resources for selection of the acquisition mode, and resources for
25   selection of the acquisition trigger source,

- resources for amplification and shaping of the signals,

- and resources for receiving the configuration parameters.

10 - An installation according to claim 8, characterised in that the control sub-module includes resources to control
30 the frontal electronic unit and to control the detector.